

The following are used: *A-8-C*

\mathbb{R}^n is a vector space over \mathbb{R} with the usual addition and scalar multiplication. The norm $\| \cdot \|$ is defined by $\|x\| = \sqrt{x_1^2 + \dots + x_n^2}$. The inner product $\langle \cdot, \cdot \rangle$ is defined by $\langle x, y \rangle = x_1 y_1 + \dots + x_n y_n$. The orthogonal group $O(n)$ is the group of all linear transformations $T: \mathbb{R}^n \rightarrow \mathbb{R}^n$ such that $T^T = -T$ and $T^2 = -I$. The Lie algebra $\mathfrak{o}(n)$ is the set of all $T \in O(n)$ such that $T^T = -T$. The adjoint representation $\text{Ad}: O(n) \rightarrow \text{GL}(\mathfrak{o}(n))$ is defined by $\text{Ad}_T(X) = T X T^{-1}$. The Killing form $B(X, Y) = \text{tr}(\text{ad}_X \text{ad}_Y)$ is a symmetric bilinear form on $\mathfrak{o}(n)$. The Cartan-Killing classification theorem states that the simple Lie algebras over \mathbb{C} are classified by the Dynkin diagrams. The Cartan-Killing classification theorem states that the simple Lie algebras over \mathbb{C} are classified by the Dynkin diagrams.

1. The first step is to identify the problem or question that needs to be answered. This involves understanding the context and the specific requirements of the task.

ATTACHMENT TO PAPER NO. 12